

AMENDMENTS TO THE CLAIMS

Claims 1-64. (Canceled)

65. (Currently amended) An integrated circuit capacitor comprising:

an oxygen/nitrogen gas annealed structure comprising:

a polycrystalline silicon plug, said polycrystalline silicon plug having an annealed resistance value which is more than fifty percent higher than an initial resistance value;

a bottom electrode formed over ~~a conductive~~ said polycrystalline silicon plug, said bottom electrode comprising at least one of a platinum, rhodium, and a platinum-rhodium alloy layer; and

a ~~nitrogen and oxygen annealed~~ tantalum pentoxide layer formed over said bottom electrode, said annealed tantalum pentoxide having crystal growth primarily in the <200> direction; and

an upper electrode formed over said tantalum pentoxide layer, said upper electrode comprising at least one of a platinum, rhodium, and a platinum-rhodium alloy layer.

66. (Original) The capacitor of claim 65 wherein said capacitor further comprises a diffusion barrier between said conductive plug and said bottom electrode.

67. (Original) The capacitor of claim 66 wherein said diffusion barrier comprises tantalum nitride.

68. (Original) The capacitor of claim 66 wherein said diffusion barrier comprises tantalum silicon nitride.

69. (Original) The capacitor of claim 66 wherein said diffusion barrier comprises titanium nitride.

70. (Original) The capacitor of claim 65 wherein said tantalum pentoxide layer is formed by chemical vapor deposition.

71. (Original) The capacitor of claim 65 wherein said tantalum pentoxide layer has a thickness of about 50 to about 150 Angstroms.

72. (Original) The capacitor of claim 71 wherein said tantalum pentoxide layer has a thickness of about 100 Angstroms.

73. (Original) The capacitor of claim 65 wherein said upper electrode is formed by physical vapor deposition.

74. (Original) The capacitor of claim 65 wherein said upper electrode is formed by chemical vapor deposition.

75. (Currently amended) An integrated circuit capacitor comprising:

an oxygen/nitrogen gas annealed structure comprising:

a polycrystalline silicon plug, said polycrystalline silicon plug having an annealed resistance value which is more than fifty percent higher than an initial resistance value;

a bottom electrode formed over ~~a conductive~~ said polycrystalline silicon plug, said bottom electrode comprising at least one of a platinum, rhodium, and a platinum-rhodium alloy layer; and

~~a nitrogen and oxygen annealed~~ tantalum pentoxide layer formed over said bottom electrode, said annealed tantalum pentoxide having crystal growth primarily in the <001> direction; and

an upper electrode formed over said tantalum pentoxide layer, said upper electrode comprising at least one of a platinum, rhodium, and a platinum-rhodium alloy layer.

76. (Original) The capacitor of claim 75 wherein said capacitor further comprises a diffusion barrier between said conductive plug and said bottom electrode.

77. (Original) The capacitor of claim 76 wherein said diffusion barrier comprises tantalum nitride.

78. (Original) The capacitor of claim 76 wherein said diffusion barrier comprises tantalum silicon nitride.

79. (Original) The capacitor of claim 76 wherein said diffusion barrier comprises titanium nitride.

80. (Original) The capacitor of claim 75 wherein said tantalum pentoxide layer has a thickness of about 50 to about 150 Angstroms.

81. (Original) The capacitor of claim 80 wherein said tantalum pentoxide layer has a thickness of about 100 Angstroms.

82. (Currently amended) An integrated circuit capacitor comprising:

[[A]] a bottom electrode formed over an oxidizable polycrystalline silicon plug, said polycrystalline silicon plug having an initial resistance value;

an annealed tantalum pentoxide dielectric formed over said bottom electrode;

an upper electrode formed over said tantalum pentoxide dielectric, wherein said oxidizable polycrystalline silicon plug has a post-anneal resistance value which is no more than fifty percent higher than said initial resistance value.

83. (Original) The capacitor of claim 82 wherein said capacitor further comprises a diffusion barrier between said oxidizable polycrystalline silicon plug and said bottom electrode.

84. (Original) The capacitor of claim 83 wherein said diffusion barrier comprises tantalum nitride.

85. (Original) The capacitor of claim 83 wherein said diffusion barrier comprises tantalum silicon nitride.

86. (Original) The capacitor of claim 83 wherein said diffusion barrier comprises titanium nitride.

87. (Original) The capacitor of claim 82 wherein said tantalum pentoxide layer is formed by chemical vapor deposition.

88. (Original) The capacitor of claim 82 wherein said tantalum pentoxide layer has a thickness of about 50 to about 150 Angstroms.

89. (Original) The capacitor of claim 88 wherein said tantalum pentoxide layer has a thickness of about 100 Angstroms.

90. (Original) The capacitor of claim 82 wherein said upper electrode is formed by physical vapor deposition.